

You Are Invited to Design and Build a Dream Room

Summary

Students use proportional thinking to enlarge and shrink scale. Students gain experience in measuring, using percentages, computing area, and applied problem solving.

Time Frame

2 class periods of 45 minutes each

Group Size

Large Groups

Life Skills

Thinking & Reasoning, Communication, Employability

Materials

Math Vantage: 'Proportions-The Stretching and Shrinking Machine' TV and video player A classroom set of simple house plans Blank Graph Paper; Grid worksheet with small, medium, and large grids. The mid-size grid should contain a very simple drawing; Dream Room worksheet Careers That Use Proportions worksheet Personal Reflection worksheet.

Background for Teachers

The lesson is video based. Using graph paper, students design a 'Dream Room' then build and decorate a scale model. Students may work individually or as a team of two. The finished project should include estimated costs for decorating and furnishing a full scale room. A writing assignment is included, plus a personal reflection worksheet.

Intended Learning Outcomes

OVERVIEW:

At this level, students should come to understand and use proportional thinking. Student experience in the classroom should focus attention on mathematics as it relates to the real world.

The lesson includes an applied video-based lesson that can be particularly useful in:

- Including girls' interests into the math curriculum.
- Encouraging young women that math is relevant in real world applications.
- Presenting exceptional role models in a variety of jobs and careers.
- Providing opportunity for diverse learning styles.

Instructional Procedures

FOCUS FOR VIEWING

'During the film, I want you to listen for three uses of proportions that help make our world more interesting.'

VIEWING ACTIVITIES:

BEGIN the film.

GIVE students a specific responsibility while viewing.

'Listen for the definition of scale factor and similar. How do scale and similarity keep objects in proportion?'

STOP film after the three-dimensional box.

Discuss what happens when objects are not kept in proportion. RESUME film.

GIVE students a specific responsibility while viewing.

'Watch for the meaning of a grid system. Be ready to write your definition.' PAUSE film after the camera and photocopy segment.

'The famous painter Michael Angelo used the grid system to keep his paintings in proportion. We are going to do a proportional activity using grids.'

PASS out a grid worksheet with small, medium, and large grids. The mid-size grid should contain a very simple drawing.

ASK the students to enlarge and shrink the drawing.

ASK the students to write reflections on scaling. You might address the change in total area of the drawings.

WHILE THE STUDENTS ARE BUSY DRAWING, FAST FORWARD through the red Volkswagen and the artist segment. RESUME tape.

GIVE students a specific responsibility while viewing.

'Watch for the meaning of a model. How do models relate to a full sized object?' STOP tape when Ellen sits to discuss the design of furniture in an office.

ASK students to verbally express their ideas on models.

ASK students to list uses of proportions that help make our world more interesting?' POST-VIEWING ACTIVITIES

Students will list careers that can be found in and around the community that use proportional thinking skills, and describe how proportional thinking is used in the specific career. A worksheet is provided. ACTION PLAN:

Using graph paper, students are to measure their bedroom and then design a 'Dream Room' that uses $\frac{1}{4}$ ' to 1' scale. The finished project should include estimated costs for decorating and furnishing a full scale room. As the final step of the lesson, complete the Dream House Assessment.

Extensions

EXTENSIONS:

Students could build a scale model of their bedroom. The teacher could investigate an interdisciplinary project with the Utah state seventh grade TLC core curriculum.

Authors

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